

ABSTRACT OF THE DISCLOSURE

A microwave plasma generator is provided in which a gas in a vacuum vessel is directly excited by an evanescent wave from a microwave resonator disposed in the vessel without using an ECR system. The microwave plasma generator of the present invention includes a microwave source to generate an excitation microwave, a discharge gas source, a plasma generation vacuum vessel to be supplied with a gas from the discharge gas source, a coaxial waveguide to introduce the excitation microwave into the vessel, and a parallel plate launcher disposed in the vessel. In the parallel plate launcher, a resonant cavity is constructed from a first conductor plate connected to an outer conductor of the coaxial waveguide, a dielectric plate, and a second conductor plate connected to a central conductor of the coaxial waveguide and provided with a plurality of openings to emit evanescent microwaves into the vacuum vessel.